

WHAT IS CLAIMED IS:

1. A vehicle having a flywheel drive system comprising:
  - a flywheel that is connected to a vehicle drive system and that provides energy to drive the vehicle;
  - an electric motor that is connected to and that causes the rotation of the flywheel;
  - a charger assembly;
  - two drive batteries, each electrically connectable to the electric motor and the charger assembly;wherein when one of the drive batteries is electrically connected to the electric motor, the other drive battery is electrically connected to the charger assembly;
- wherein the charger assembly comprises a charger, an inverter, a charger battery, and an alternator, further wherein the alternator is connected to the vehicle drive system; and
- further wherein the alternator is electrically connected to and energizes the charger battery when the vehicle is in motion, the charger battery is electrically connected to and powers the inverter, the inverter is electrically connected to and powers the charger, and the charger is electrically connected to and recharges the drive battery that is not connected to the electric motor.

2. A vehicle as described in claim 1, further comprising a switch electrically connected to the electric motor, the charger assembly, and the two drive batteries;

wherein the switch is adapted change electrical connection from a first state where first drive battery and electric motor are connected, and second drive battery and charger assembly are connected to a second state where first drive battery and charger assembly are connected, and second drive battery and electric motor are connected.

3. A vehicle as described in claim 2, where in the switch is a manual switch.

4. A vehicle as described in claim 2, where in the switch comprises a voltmeter, and wherein the switch automatically changes electrical connections based upon predetermined voltmeter readings.

5. A vehicle as described in claim 1, wherein each drive battery is set of a plurality of batteries connected together in series.

6. A vehicle as described in claim 1, wherein the weight of the flywheel is in the range of about five percent to about ten percent of the weight of the vehicle.

7. A vehicle as described in claim 1, wherein the charger is a cell-type charger.

8. A vehicle as described in claim 1, wherein the flywheel is connected to the vehicle drive system through a set of variable speed sheaves.